

Biomedical robotics – Assignment 2

Questions

1. Why the down sampling is computed at the end of the EMG processing?

The EMG signal is a biomedical signal that measures electrical currents generated in muscles during its contraction representing neuromuscular activities. The signal acquires noise while traveling through different tissues and for this reason at the beginning it should be filtered. The signal should then be rectified since only positive values are analyzed. Finally the downsampling reduces data size in order to transmit them in a more easily way, for this reason it's done at the end of the signal processing.

2. When the muscle activation starts with respect to the movement (see motion signal)?

We observe from the EMG plot that the right bicep and the tricep are activated at the same time (for example, in set one at 110 ms).

3. Which differences can you detect between the sets with and without the application of the force field?

In the case in which there is an application of force field, we can notice that the intensity of muscle activation is higher. Also in the movement plot you can see that the target is not easily reached because the trajectory to reach the target is not as linear as before.